IOWA UTILITIES BOARD
Policy Section

Docket No.: NOI-2008-0003
Utility: Multiple
Memo Date: September 29, 2011

TO: The Board

FROM: Smart Grid Team
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SUBJECT: Staff Questions on Smart Grid Deployment and Aggregators of Retail Customers

ACTION REQUESTED: Needs Board Order Asking Questions

BACKGROUND

On March 9, 2010, the Board issued an order that expanded an existing inquiry, under Docket No. NOI-08-03, to include smart grid deployment in Iowa. This Board order also scheduled a workshop. A second workshop on smart grid and aggregation of retail customers was held on April 16, 2010.[1] After the second workshop, additional comments from participants were received on May 10, 2010. On November 19, 2010, and May 16, 2011, staff sent memos to the Board that summarized the results of staffs' monitoring of various activities related to smart grid deployment in Iowa and other states.

STAFF ANALYSIS/COMMENTS

Smart Grid

It has been a year since the last workshop on smart grid was held and stakeholder comments were received by the Board. Since that time there have been numerous developments in smart grid technology, policy, and programs. For example, the Iowa Association of Municipal Utilities (IAMU) has reported on its smart thermostat program conducted with the aid of the Smart Grid

[1] An aggregator joins two or more customers into a single purchasing unit to negotiate the purchase of electricity from retail electric providers or utilities.

Investment Grant received from the U.S. Department of Energy (DOE). The IAMU is also exploring the issue of dynamic pricing. The Iowa Rural Electric Cooperatives (RECs) have also been actively deploying smart grid technologies and about seventy-five percent of Iowa RECs have installed Automated Meter Reading (AMR) of one sort or another. While MidAmerican Energy Company's (MEC) Critical Peak Pricing Project has been delayed, it began a separate project in which OPower will conduct a customer education program for 50,000 customers.[2] On a regional level, MISO and PJM have recently completed their first round of smart grid enhancements which included deployment of devices known as synchrophasors or phasor measurement units.

In addition, there have been a number of national reports on smart grid deployment. On April 7, 2011, the Electric Power Research Institute (EPRI) issued a report, "Estimating the Cost and Benefits of the Smart Grid – A Preliminary Estimate of the Investment Requirements for a Fully Functioning Smart Grid." The report states: "The investment needed to implement a fully functional smart grid in the US ranges from $338 billion to $476 billion and can result in benefits between $1.3 trillion to $2 trillion." On June 13, 2011, the White House released a new report by the Cabinet-level National Science and Technology Council (NSTC) that delineates four overarching goals the Administration will pursue in order to ensure that all Americans benefit from investments in the nation's electric infrastructure. These goals include: better alignment of economic incentives to boost development and deployment of smart-grid technologies; a greater focus on standards and interoperability to enable greater innovation; empowerment of consumers with enhanced information to save energy, ensure privacy, and shrink bills; and improved grid security and resilience. Also on June 13, 2011, DOE Secretary Steven Chu announced that more than five million smart meters have been installed nationwide as part of Recovery Act-funded efforts to accelerate modernization of the nation's electric grid. On September 14, 2011, Agriculture Secretary Tom Vilsack announced that 27 RECs, including Guthrie County REC in Iowa, will receive funding for generation and transmission projects, distribution facilities, and smart grid technologies.

In light of these and other smart grid developments since the Board last solicited input on the smart grid issues, staff believes it is time to again "take the pulse" of the industry with regard to these developments since previous responses and comments on these topics and questions were found to be very useful. Staff believes that investor owned utilities should be asked to provide updated answers to the following questions. Other utilities and interested parties should also be encouraged to provide updates. In addition, any party may provide information on any smart grid development or smart grid related topic not captured by the questions set forth below.

[2]OPower is a privately owned company that contracts with utility companies to create individualized Home Energy Reports for utility customers that analyze customers' energy usage and offer recommendations on how to save energy.

General questions on smart grid issues

1. What is your long-term vision for the future of the electric grid?
2. What are the goals for your smart grid components and network? Will it be a flash cut approach or rolled out in phases?
3. What changes in smart grid technology has your company seen in the last two to three years?
4. What have been the advances in cyber security as it relates to protection of your individual customer data?
5. Are your customers requesting smart grid services/devices?
6. Why has smart grid activity cooled down, at least for IPL and MEC?
7. What rights over the consumer data does the utility have?
8. What safeguards can be built into the system to prevent the consumer data from being stolen or corrupted as it is being sent from the premises?
9. Is there any history of smart meters, AMR, substation automation or distributed automation communications networks being hacked? If so, please explain.
10. How will the consumer get access to the metered data and what software or other methods will be made available to the consumer to understand their usage data?
11. What impact do you think recent White House activity will have on the future of smart grid technology development?
12. What do you think the impact will be of behind-the-meter programs (like Google's) on energy efficiency and other utility matters? Will these types of programs take the place of some smart grid functions?
13. Has your company (or an affiliate) studied the relationship between energy efficiency and smart grid? If so, what were the findings?
14. Does the emergence of numerous "past the meter devices" (i.e. energy management devices) affect the need or benefits utilities expect from smart grid deployment?
15. Has the technology for consumer level energy management devices progressed to the point where homeowners or small businesses find them cost-effective or feasible?
16. What studies are available on the topic of "phantom loads" or energy used in standby mode by various plug-in electrical devices (set-top boxes, battery chargers, other devices with power supplies that use electricity when they appear to be off)? Do any of these studies include data applicable to Iowa utilities or energy users?
17. What is the likelihood that issues relating to "phantom loads," or energy used by electronic devices in standby mode, will be resolved by improvements in specific technologies or federal standards? If "phantom loads" are not amenable to standards or in-the-box technology solutions, how likely are individual households to undertake the numerous behavioral changes needed to manage these devices?

Aggregators of Retail Customers (ARC)

ARCs obtain the rights or options of retail electric consumers to purchase electricity at a certain regulated rate.[3] The ARCs then sell those options in the wholesale market.

On March 9, 2010, the Board expanded an inquiry docket to address the Federal Energy Regulatory Commission (FERC) directive to regional transmission organizations, such as MISO, to amend their rules to allow ARCs to offer demand response resources into wholesale and ancillary services markets, if allowed by state commissions.[4] The Board order posed several questions related to ARCs.

On March 29, 2010, the Board issued an order temporarily prohibiting ARCs from operating in Iowa. The Board order stated that:

> Because there are concerns that allowing ARCs to operate in Iowa may violate Iowa's exclusive service territory statutes and could impose costs on other ratepayers that could be found to be discriminatory, the Board will temporarily suspend and prohibit ARCs from operating in Iowa and will temporarily suspend and prohibit the transfer of demand response load reductions to MISO markets directly by retail customers or by third-party ARCs. 18 C.F.R. § 35.28(g)(1)(iii). After further investigation of the issues surrounding ARCs in Docket No. NOI-08-3, the Board may continue, withdraw, or modify the temporary prohibition of ARCs operating in Iowa.

Although ARC-related issues were discussed at the Board's April 16, 2010, workshop, the Board has not solicited input on ARC issues since that time. Staff believes inquiry participants should provide updated answers to the following questions. Responses to these questions will help the Board determine whether to continue, withdraw, or modify the temporary prohibition of ARCs operating in Iowa:

1. How might the operation of ARCs in Iowa affect the participation of utility customers in demand response tariffs or programs, such as interruptible, time-of-use, or direct load control programs?

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[3] Beginning in the late 1990s, several states implemented programs allowing retail electric customers to choose their electric power suppliers. Iowa is a traditional regulated state where utilities provide service under exclusive service territories. ARCs generally operate in retail choice states.

[4] Final rule,"Wholesale Competition in Regions with Organized Electric Markets," Docket Nos. RM07-19-000 and AD07-7-000, 125 FERC ¶ 61,071 (2008) (Order 719) and "Order on Rehearing," 128 FERC ¶ 61,059 (Order 719-A).

2. How might the operation of ARCs in Iowa affect the forecasts of Iowa utilities with respect to peak load, reserve margins, energy sales, and other parameters?
3. If ARCs are allowed to operate in Iowa, would utilities seek to alter the goals in their energy efficiency plans for capacity and energy savings?
4. If the Board takes no action with respect to ARCs, what effect will that have on Iowa load serving entities in the short-term and long-term?

RECOMMENDATION

It is recommended that the Board direct the General Counsel to draft an order for the Board's consideration that asks Interstate Power and Light Company, MidAmerican Energy Company, and other interested parties to file responses to questions in the Board order on or before four weeks after issuance of a Board order.

RECOMMENDATION APPROVED **IOWA UTILITIES BOARD**

/s/ Elizabeth S. Jacobs *9-30-11*
Date

/spb

/s/ Darrell Hanson *10-6-11*
Date

/s/ Swati A.Dandekar *10-6-11*
Date